

as transverse bars at right angles to the costal margin. Near the base of this wing below the cell there is a dark fuliginous mark. The spots upon the secondaries are crowded together toward the base and again toward the outer margin, leaving a clear discal band of the ground color visible. Three small round spots near the base and a quadrate bar in the outer series are conspicuous because showing no silvery pupillation and being darker in color than the rest. Anal lobe black. Palpi, legs and body concolorous. Expanse 27 mm.

Type ♂ in collection of the author.

26. *A. ARGYROCYCLUS*, sp. nov.

♀. Allied to *A. orcas*, Drury, but differing widely in important particulars from the female of that species.

Upperside:—The prevalent color is dark greenish brown glossing with blue in certain

lights. There is a large white spot at the end of the cell of the primaries followed by a subapical series of very small and obscure spots. Underside:—The ground color is dark orange fading upon the inner margin of the primaries into pale testaceous. The fringes are black checked with white at the tips of the nervures. The anal lobe is black. The silvery spots adorning the wings are relatively large and ringed with dark maroon. Instead of the one long spot which stands upon the primaries of *A. orcas* the fourth from the base, there are in *A. argyrocyclus* three spots grouped triangularly. Instead of the nine silver spots which appear upon the secondaries of *A. orcas* there are in *A. argyrocyclus* sixteen spots and all lying within the submarginal band of dark maroon which in both species appears upon the secondaries. Expanse of wings 40 mm.

Type in collection of author.
Pittsburg, Pa., 10 Nov. 1890.

SOME GENERA OF OEDIPODIDAE RESCUED FROM THE TRYXALIDAE.

BY SAMUEL HUBBARD SCUDDER, CAMBRIDGE, MASS.

In his *Prodromus Oedipodiorum*, Saussure constructs a table for the separation of the genera of this family, in which, when he has reached the "stirps Oedipoda," afterwards termed by him Oedipodites, he first separates from the remainder of the stirps the new genus *Daemonea*, an extraordinary form from Peru, known to him apparently only by a single imperfect and immature specimen in Brunner's collection. This genus he found to differ from all others in the forward extension of the vertex, "faciem adumbrans," the stout form of

the hind femora with slight carinae, the great length of the hind tarsi which are nearly two thirds as long as the hind tibiae, and the peculiar concave structure of the dorsal surface of the pronotum.

In a recent study of some American species of *acridiodes* I have been greatly puzzled by a number of forms which seemed to lie on the border land between the *oedipodidae* and the *tryxalidae*. One by one they have been removed in my collection from one family and the other without finding a

resting place, until their comparative examination, after a general survey had been completed, showed me that they possessed features in common which warranted their being grouped together and placed as a whole in the *oedipodidae*, although several of them present marked Tryxaline features. I had concluded to regard them as a distinct subfamily of *oedipodidae*, when I discovered that one of them, the genus *Hippacris*, described by me many years ago* from Peru as an exceptional form of *tryxalidae*, was very closely related indeed to Saussure's *Daemonea*, so much so that the latter genus also would have to be placed in the same category; this separate treatment, but under the name of a stirps, I believe *Daemonea* and *Hippacris* would have received at Saussure's hands, had he possessed a specimen of the latter; and to this assemblage of forms I propose to give the subfamily name of

ACROLOPHITINAE.

The distinguishing characteristic of the members of this group among *oedipodidae* is that the front and vertex conspire to form an advancing process, sometimes also ascending, in the upper front of the head, much as in *Colpototha* among *acrididae*, and in many *phymatidae*, and of course reminding us of *tryxalidae*; but in such other characteristics of structure as would be regarded as more commonly found in the *tryxalidae* than in the *oedipodidae*, they almost invariably incline to the latter group; and where any one of them shows a Tryxaline feature (besides the fronto-vertical process) in any marked

degree, it is almost sure to be offset by some other more striking Oedipodine features and often by a combination of several. As a general rule, the face is almost perpendicular below the fronto-vertical process, which with the process causes the upper portion to be more or less concave. The eyes, except in *Peruvia* and especially in *Gymnes*, are remarkably small, generally very much shorter than the infraocular portion of the genae; the antennae are linear or faintly ensiform and usually depressed on the basal joints; the metazona is always somewhat though rarely much longer than the prozona, with the posterior process subrectangulate or broadly rounded, generally with a slight median carina running through the whole pronotum, but crested on the metazona in *Acrolophitus*, and almost absolutely absent in the genera at the other end of the series; the prozona traversed by a pair of faintly incised continuous transverse sulci, the hinder never confused with the typical sulcus separating the prozona and metazona; lateral lobes of the pronotum with the anterior and posterior margins parallel or subparallel, except in *Hippacris* (and *Daemonea*?); the mediastinal and scapular areas in the basal half of the tegmina more or less, sometimes very, irregularly reticulate, never with simple transverse parallel veins; the vena intercalata generally obscure, sometimes wanting, the vena axillaris sometimes free, sometimes impinging on the anal vein; metasternal lobes distant (except in *Peruvia*).

There is no doubt that *Hippacris* and *Daemonea* are widely separated from the others and that fully to justify their collocation in this manner intermediate types should be found; these are to be sought in the western tropics of America. It should not, however, be overlooked that in the form of the lateral lobes of the pronotum *Hippacri*

*Proc. Bost. soc. nat. hist., 1875, v. 17, p. 267.

and *Daemonea* are far more Tryxaline than any of the others, for the posterior margin rapidly retreats from the very tip, so that the lobe narrows perspicuously. The features in which these two genera stand apart from the others will be seen in the following table of the genera of this group, in which I have placed all known to me.

TABLE OF THE GENERA OF ACROLOPHITINÆ.

Body slender; vertex horizontal or ascending at apex, the tip bluntly pointed; frontal costa extending to clypeus; metazona above transversely convex or tectiform or plane with a median carina, never concave; lower posterior angle of lateral lobes of prothorax subrectangulate; hind legs relatively long; hind femora slender, elongate and compressed; hind tibiae with more than eight spines in the outer row; hind tarsi less than half as long as hind tibiae.

Head as viewed laterally with distinctly ascending vertex; face below fronto-vertical process subperpendicular; metazona distinctly elevated above the prozona, tumid or crested; antennae more than half as long as the tegmina.

Metazona much longer than prozona, with an elevated crest. *Acrolophitus*.

Metazona barely longer than prozona, tumid, but with only a slight carina *Acrocara*.

Head as viewed laterally with vertex scarcely or not ascending; face below fronto-vertical process distinctly though not greatly declivent; metazona hardly or not elevated above the prozona, rarely tumid, never more than gently carinate; antennae less than half as long as the tegmina.

Antennae much longer than the face; lower margin of lateral lobes of prothorax anteriorly excised, broadly exposing the pleural plate.

Antennae entirely filiform; dorsum of metazona raised at an exceedingly small angle with that of the prozona; anterior margin of tegmina shouldered but not distinctly lobed near the base; last hind tarsal joint hardly more than half as long as the other two together.

Pedioscirtetes.

Antennae with the joints of the basal third depressed and slightly broader than beyond; dorsum of prozona and metazona in same plane; anterior margin of tegmina distinctly lobed near the base; last hind tarsal joint (at least in *Machaerocera*) longer than the other two joints together.

Fastigium of vertex longitudinally sulcate with no median carina; median carina of pronotum subobsolete between the sulci of the prozona; posterior margin of lateral lobes not produced posteriorly at its extremity; axillary vein of tegmina free; ulnar vein normal.

Machaerocera.

Fastigium of vertex transversely tumid with a distinct median carina in addition; median carina of pronotum equally distinct throughout; posterior margin of lateral lobes produced posteriorly at the extremity into a slight rounded lobe; axillary vein of tegmina impinging on the anal at the end of the basal third of the wing; ulnar vein approaching the median. . . *Peruvia*.

Antennae shorter than the face; lower margin of lateral lobes of prothorax

nearly horizontal throughout, scarcely permitting the pleural plate to be seen.

Gymnes.

Body very stout; vertex slightly descending at apex, the tip truncate; frontal costa not extending over the lower half of the face; metazona above transversely concave; lower posterior angle of lateral lobes of prothorax decidedly obtusangulate; hind legs relatively short; hind femora short and stout; hind tibiae with not more than eight spines in the outer row; hind tarsi more than half as long as hind tibiae.

Vertex gently convex between the eyes; transverse sulci of pronotum faintly traced except at the lateral canthi and there not deep, each subordinate lobe at this point armed with a rounded tubercle..... *Hippacris.*

Vertex transversely sulcate between the eyes; transverse sulci of the pronotum distinct, cutting deeply through the sharp lateral canthi..... *Daemonea.*

From one of the early explorations next the eastern base of the Rocky Mountains under Major Long, Say was able to bring home many curious insects which for a long time were known only by his descriptions. One of these was his *Gryllus hirtipes* taken "on the banks of the Arkansaw River, about a hundred and fifty miles from the mountains." This striking and beautifully marked insect is still a rarity, and was not mentioned from the time of Say's description in 1825 until 1871 when Thomas in one of Hayden's Reports established for it the genus *Acrolophitus*, but left us at a loss as to its position, as he placed it with *Tomonotus* Sauss., an Oedipodid, between *Stauronotus* and *Stenobothrus*, the last two being well known *tryxalidae*; two years later how-

ever, in his Synopsis of the Acrididae he plainly refers it to a "section" containing only *tryxalidae*. No one has since disturbed it. It can hardly have been known to Saussure, the latest monographer of the *oedipodidae*.

As stated above however it is plainly one of the *oedipodidae*, for although the vertex is ascending and prominent, forming a distinct frontal process which makes it present a very curious aspect among *oedipodidae*, while the vena intercalata of the tegmina is feeble and irregular or wanting, yet its other characteristics are all of another kind. The front is subperpendicular, except for the slightly projecting process above; the eyes are very small and not more than half as long as the infraocular portion of the genae; the antennae are linear; the pronotum is crested (but on the metazona only), the metazona much longer than the prozona, rectangular behind; the transverse sulci of the prozona are continuous and intersect the slight median carina; the anterior and posterior margins of the lateral lobes are subparallel; the basal half of the marginal area of the tegmina is irregularly and rather densely reticulate; the anal and axillary veins are independent; and the lobes of the metasternum are rather widely distant. Except for the fronto-vertical process the aspect is wholly Oedipodine. The structural features mentioned by Thomas being an insufficient characterization of this curious genus, the following description may here find a place.

ACROLOPHITUS Thomas.

Body moderately slender. Head moderately large, slightly enlarging below, giving greater effect to the subconical ascending and advancing process, which is nearly as long as the eye and is formed of the extension of the front and vertex; the latter attenuate in front, forming slightly less than a right angle with the upper part of the frontal costa, the angle minutely rounded; frontal costa slender, the sides faintly converging from below upward, above the median ocellus more rapidly convergent and at extreme summit pinched to a lamina, below it sulcate, the lateral carinae of the face conspicuous throughout; fastigia obsolescent but not confounded with the vertex, their position at the convex base of the lateral ridge of the frontal process being clear but not sharply defined, the fastigia being in no way depressed, not visible from above. Lateral ocelli far removed from the margin of the vertex, close to the eyes. Eyes small, feebly prominent, not more than half as long as the infraocular portion of the genae. Antennae half as long again as head and prothorax together, nearly as long as the hind femora, rather coarse, the first joint nearly twice as long as broad, but little stouter than the succeeding, the joints of the apical half or more punctate.

Prothorax with the prozona quadrate with parallel sides, the dorsum depressed but transversely and gently arched, the metazona tapering slightly forward, the dorsum tectiform and strongly crested,—this with the elevated head giving it a strong selliform aspect; prozona with the median carina very obscure, distinctly intersected not only by the typical sulcus (which is thrust forward by the metazonal crest) but also by two additional sulci, between which the carina is entirely obliterated; metazona strongly and roundly crested, the hind margin rectangulate, the lateral carinae distinctly intersected by the typical sulcus, which extends normally into the lateral lobes; these have the pos-

terior angle rectangulate, the lower margin obtusely angular, its hinder portion horizontal, its anterior obliquely ascending; metasternal lobes in ♂ nearly, in ♀ fully, as far apart as the mesosternal, both quadrate or transversely quadrate. Tegmina almost uniformly coriaceous throughout but feebly membranaceous apically, moderately slender, rather densely reticulate, supplied normally with spurious veins, the vena intercalata vague or lacking, the vena media and vena discoidalis both furcate, the vena axillaris independent. Radiate veins of anal field of wings normal, not incrassate. Hind femora slender, longer than the abdomen; spurs of hind tibiae strong, curved, arcuate, of considerable length but the inner scarcely two thirds as long as the first joint of the tarsi, which are of normal length.

These characteristics, apart from the pointed head, seem to show the nearest relation to *Leptoternis*, *Conipoda* and allied genera of the Old World; but *Acrolophitus* is still far removed from them, and though not so extraordinary a form as Saussure's *Daemonea* from South America, certainly shows many features which recall that strange type, and forms one link in a series connecting the typical *oedipodinae* therewith.

I know of but one species of the genus, *A. hirtipes*, first found by Say on the upper Arkansas and since reported from near Cañon City, Colorado, and Fort D. A. Russell, Wyoming (Thomas), and southern Colorado (Carpenter), and taken in Colorado 5000' (Morrison), between Lakin, Western Kansas, and Pueblo, Col., July 8-9, 1877 (Scudder), at Pueblo, Col., July 8-9 and August 30-31, 1877 (Scudder), Meridian Creek, Tex., June 6, "very rare, found among bushes" (Belfrage), and

Pecos River, Tex. (Capt. Pope). Mr. P. R. Uhler has also given me specimens from Kansas and Texas. It seems to have been oftenest taken near its first known locality, on the upper Arkansas, east of the mountains.

The next genus mentioned in the table is closely allied to the preceding, but departs in a greater degree from the Oedipodine type. Except for lacking a metazonal crest on the pronotum, it bears indeed a striking resemblance to *Acrolophitus*, a resemblance which is most marked in the strange form of the head in both. The points, however, in which it further departs from the normal Oedipodine type are not many and may be summed up as follows: The prozona and metazona are of equal length, the latter obtusely and roundly angulate behind, the angulation scarcely perceptible; the basal third or fourth of the marginal area of the tegmina is reticulate indeed, but the reticulation is sometimes mostly made up of crowded transverse veinlets interlinked by inosculating longitudinal veins; and the axillary vein unites with the anal by the end of the basal fourth of the wing, much as in *Tropidolophus*. It does not appear to have been described, and may be characterized as follows.

ACROCARA (ἄκρος, κάρα) gen. nov.

Body slender, subfusiform. Head of the same general form as in *Acrolophitus*, but somewhat more slender and with the fronto-ventral process sometimes somewhat more advanced; the vertex attenuate and conical in front, slightly declivent at extreme tip, forming in general considerably less than a

right angle with the upper, gently convex portion of the frontal costa; its upper surface is plane or plano-convex; frontal costa very similar to that of *Acrolophitus* but not so strongly compressed above the ocellus and compressed more uniformly and over a broader area, allowing the median sulcus to extend to the vertex though as slender as possible in the compressed portion; its sides are also less regularly convergent, being either disturbed by a rounded divergence, just above the extreme base, which just fails of reaching the clypeus or else parallel below; lateral carinae of the face moderate, straight, divergent; fastigia and lateral ocelli as in *Acrolophitus*. Eyes small, not very prominent, a little longer than half the infraocular portion of the genae. Antennae twice as long as the head and thorax together, longer than the hind femora, moderately coarse, the first joint as in *Acrolophitus*, the succeeding joints cylindrical and equal and the joints of the apical two thirds punctate (♂), or a little more than half as long again as head and thorax together, shorter than the hind femora, the joints beyond the basal sometimes depressed and then tapering to the apex (♀).

Prothorax with the prozona subquadrate with parallel sides, the dorsum not depressed but regularly arched transversely, in the ♀ with a slight tendency to be tectiform, the metazona tapering strongly forward and slightly tumid, the dorsum depressed but slightly tumid, this tumidity with the elevated head giving the whole a somewhat selliform aspect; prozona with the median carina subobsolete, distinctly intersected not only by the exactly transverse, typical sulcus, but also by two additional sulci, between which the carina is sometimes entirely obliterated; metazona with a distinct but slight and uniform median carina fading at the extremities, the hind margin obtusely and roundly angulate, the lateral carinae distinctly intersected by the typical sulcus which extends normally into the lateral lobes;

these have the posterior lower angle rectangular, the extreme angle rounded, the lower margin barely angulate, the hinder portion subhorizontal, its anterior slightly ascending; metasternal lobes in ♂ about three fourths as far apart as the mesosternal in the ♀ as far apart, subquadrate with convex sides. Tegmina slender, coriaceous throughout, but nowhere densely and less densely apically, rather densely reticulate on the basal half, normally supplied with spurious veins, the vena intercalata rather feeble and irregular but present, the vena media and vena discoidalis both furcate, the vena axillaris impinging on the vena analis. Radiate veins of anal field of wings normal, not incrassate. Hind femora slender, longer (♂), or slightly shorter (♀), than the abdomen; spurs of hind tibiae as in *Acrolophitus*; hind tarsi of normal length.

It will be seen from these details, that, notwithstanding the different character of the dorsal portion of the metazona the close relationship of *Acrocara* and *Acrolophitus* is clear. Two specimens are known to me, which may be separated as follows:—

Lateral margins of frontal costa convergent at base; fastigium of vertex as viewed above not projecting beyond the middle of the eyes by more than their distance apart at this point; middle half of wing occupied by a broad dark band.....*pulchellum*.

Lateral margins of frontal costa convergent at base; fastigium of vertex as viewed above projecting beyond the middle of the eyes by considerably more than their distance apart at this point; almost the entire wing dark.....*maculipenne*.

Bruner's *Pedioscirtetes pulchella* (Proc. U. S. nat. mus., 1890, v. 12, 60-61, pl. 1, fig. 10) of which he has considerably sent me the female type for examination, belongs in this genus;

the other species has not before been described.

ACROCARA MACULIPENNE.

Pedioscirtetes maculipennis Bruner, Ms.

Dull brownish olive green; head, thorax, and legs sparsely and thinly pilose. Head dull shining silvery white with a faint greenish tinge; two obliquely vertical pale green bands pass downward and more or less backward from below the eye and from the posterior margin of the same, the former fading and dispersed below; vertex with a similar broad median band, merging into dark brown anteriorly; frontal carina luteous, the sulcus infumated below and more or less greenish. Antennae blackish brown, the apical and basal joints and the inner side of the impunctate joints reddish luteous. Prothorax with the dorsum olivaceo-fuscous, both front and hind margins and lateral carinae rather broadly ferrugineo-testaceous, the latter sometimes becoming pallid on the prozona; lateral lobes with varying shades of brown and olivaceous, the whole margin testaceous, the prozona with inferior and median pallid longitudinal stripes of varying width. Tegmina mottled with light and dark brown, the former prevailing on the basal, the latter on the apical half, arranged on the basal half in transverse, irregular, on the apical half in subparallel, oblique blotches and bars. Wings blackish fuliginous with a slight olivaceous tint, glistening and with purplish reflections, the extreme base like the basal half of the dorsum of the abdomen bronze green, the extreme tip narrowly margined with sordid white, the veins everywhere black and in the anal area narrowly margined with pallid. Hind femora with two strongly oblique, rather broad pale bars; hind femora dull luteous, obscurely banded with fuscous in the middle, next the base, and at the apex, the apical half of the spines black. Other legs obscure

fuscous, often with a greenish tinge, with the basal half of the femora paler.

Length of body (♂) 27.5 mm., (♀) 35 mm.; tip of head to tip of closed tegmina 36 mm.; of tegmina (♂) 27 mm., (♀) 29 mm.; of hind femora (♂) 16.5 mm., (♀) 18 mm.; of antennae (♂) 21 mm., (♀) 15 mm.

Two ♂. Montelovez, Cohahuila, Mexico. September 20 (E. Palmer); one ♀, Lerdo, Mexico, November (L. Bruner).

The succeeding genus has a still more Tryxaline appearance, due principally to its more oblique face, which shows on a side view but little concavity below the fronto-vertical process. Whether it belongs in the *tryxalidae* or not, its close alliance to the preceding forms cannot be doubted. It has already been described, but insufficiently, by Thomas, who placed it with the *tryxalidae*, and it is here recharacterized.

PEDIOSCIRTETES Thomas.

Thomas wrote the name *Pedioscirtetes*, but this is incorrect, as it is plainly derived from σκίρταω.

Body slender, feebly fusiform. Head of the same general form as in *Acrocara*, but with the vertex nearly horizontal, the process barely ascendant, the process separated from the vertex by a distinct but not deep transverse arcuate sulcation striking the anterior border of the eyes; the vertex is gently convex transversely, the process slightly tumid above; frontal costa much as in *Acrocara*, but with a shallower sulcus which terminates above where the costa, over a brief space, becomes compressed to a thick lamina, and with a broader and more regular divergence at base; lateral carinae as in *Acrocara*, as also the fastigia and lateral ocelli. Eyes

small, not very prominent, about two thirds as long as the infraocular portion of the genae. Antennae (now broken in the only specimen seen) said by Thomas to extend "about one fourth their length beyond the pronotum," linear, and cylindrical except that six or seven joints beyond the second are slightly depressed and shorter than the succeeding punctate joints without gaining noticeably in breadth.

Pronotum tapering gently forward, more conspicuously on the metazona than on the prozona, the former very slightly ascending posteriorly, the dorsum of the prozona broadly convex transversely, that of the metazona nearly plane; median carina slight, slightest on the prozona, subobsolete between the sulci of the same, the two sulci of the prozona faint but complete; hind margin of metazona very obtusely angulate, the angle rounded, the lateral carinae much as in *Acrocara*; lateral lobes much as there with the anterior border slightly sinuate; metasternal lobes almost as far apart in the ♀ as the mesosternal. Termina slender, subcoriaceous on basal third only, where they are densely reticulate, normally supplied with spurious veins, the vena intercalata only indicated in the middle of its normal course, the vena media and vena discoidalis both furcate, the vena axillaris impinging on the vena analis. Radiate veins of wings normal. Hind femora longer than the abdomen; spurs and hind tarsi as in *Acrocara*.

Only a single species is known, *P. nevadensis* Thom., from Nevada, one of the type-specimens of which has been obligingly sent me for examination by Dr. Riley. The wing is not well described by Thomas, nor well figured by Glover, and in the specimen seen is not fully spread, so as to render a good description impossible in its present condition. It may be said, however, that the band is fusco-fuliginous, broader

than figured by Glover, becomes obscure and paler toward the costal margin, where it is traversed by pallid cross-veins, and has the interior margin at this point limited by the divarication of the discoidal vein.

The fourth genus, *Machaerocera* Saussure, is a common form in Mexico, and need not detain us here. It shows no elevation of the metazona whatever.

The fifth genus of the table is founded upon a species from Peru, which I formerly described as a *Machaerocera*, but which must be separated from it, its distinctive features being shown in the previous table. It may be called

PERUVIA gen. nov.

Body slender, subequal, compressed. Head moderately stout, trigonal. Vertex, including fastigium, gently and regularly convex, both longitudinally and transversely, with a distinct and equal median carina its entire length; triangular fastigium advanced in front of the eyes as far as their separation, the converging sides margined, the tip rounded; front considerably and almost uniformly declivent, faintly convex in front of the antennae, forming above a right angle with the vertex; frontal costa moderately broad, slightly expanding at the antennae, with subparallel sides, a little divergent below, with a broad and deep sulcus; lateral carinae prominent, parallel in upper half, considerably divergent in the lower; lateral ocelli next the eyes separated from them by their own width at the termination of the lower edge of the carinate margin of the fastigium of the vertex. Eyes semiglobular, prominent, equal, or perhaps a little more than equal, in width to the infraocular portion of the genae; beneath the middle of the eyes a short vertical carina which fades before reaching them. Antennae moderately

slender, the six joints beyond the second depressed (beyond broken).

Prothorax compressed with parallel sides, the dorsum plano-subtectiform, with a strong subequal median carina throughout; prozona fully as long as the metazona, with parallel, slight, irregular, lateral carinae which are not far removed from the middle of either side; it is traversed by two straight transverse sulci which cut the carinae, but the anterior of which does not extend upon the lateral lobes, being supplanted by another in advance of it; metazona with scarcely more than shouldered lateral canthi, its posterior margin angulate at a little more than a right angle; lateral lobes with normal sulci, the anterior and posterior margins subparallel, the lower posterior angle rectangulate but with a slight posterior lobe, the lower margin horizontal in its posterior half and anterior fourth, the second fourth oblique exposing the pleural plate, which shows a small descending lobe at its anterior end. Metasternal lobes of female only a little more than half as distant as the mesosternal, marked inwardly by two profound pits. Tegmina moderately slender, the anterior margin with a distinct lobe at the end of the basal fourth, subcoriaceous throughout but nowhere closely reticulate except at the extreme base and on the costal and anal margins; no intercalary vein; ulnar vein approaching the median and widely separated from the posterior ulnar; median vein simple, axillary vein impinging on the anal. Wings with humeral field very broadly scalariform, the radiate veins below normal.

The single species known to me is *P. nigromarginata* from the Peruvian Andes, described by me (Proc. Bost. soc. nat. hist. 1875, v. 17, p. 268) as a species of *Machaerocera*. It is of small size.

The last genus in this division of the *acrolophitinae* is founded upon a single female specimen, not in the most satisfactory condition, from California.

GYMNES (γυμνής*) gen. nov.

Body rather slender, compressed. Head relatively rather large, no broader beneath than above, as a whole nearly twice as high as broad, when viewed in front; vertex gently convex, transversely and longitudinally, the curve of the latter terminating at the front edge of the eyes, in front of which the fastigium is horizontal; the latter deeply and broadly sulcate with distinct bounding walls which are parallel on the hinder, convergent on the front half, the front strongly rounded; a median carina runs through the entire length of the fastigium, most distinct on the anterior half; face subdeclivent, more strongly in front of the eyes than below, the upper part of the frontal costa forming with the fastigium of the vertex less than a right angle; frontal costa rather narrow, pinched at extreme summit to a mere lamina, below subequal, slightly contracted immediately below the ocellus, slightly sulcate throughout except on the lamina; lateral carina straight, sharp, regularly divergent, extending to the edges of the clypeus; lateral ocelli situated midway between the antennae and the upper corner of the eyes, the fastigia facing more outward than downward or forward. Eyes twice as high as broad, considerably longer than the infraocular portion of the genae. Antennae very short, only as long as the head and half the pronotum, moderately stout, all the joints beyond the second excepting the apical equal, pretty strongly depressed, punctate, the apical joint half as broad, bluntly conical.

Prothorax with the prozona and metazona of subequal length, the former of equal width, rounded subtectiform transversely, the latter tumid and tapering forward considerably; median carina slight but distinct throughout, somewhat subdued on the posterior half of the prozona; lateral carinae on the metazona only terminating at the normal sulcus; two slight but continuous and gently sinuate

transverse sulci on the prozona, the anterior not passing into the lateral lobes; these have the anterior and posterior margins straight, slightly convergent, the lower posterior angle rectangulate but rounded, the lower margin horizontal, barely inclined upwards anteriorly, so that the plate below is scarcely at all exposed. Metasternal lobes transversely quadrate, scarcely nearer together than the mesosternal lobes (♀). Tegmina slender, slightly tapering, scarcely coriaceous excepting at the extreme base where only the reticulation is at all dense, being elsewhere very open. Mediastinal area almost entirely free from cross nervures or reticulation of any kind except apically; intercalary vein present, discoidal vein unbranched, axillary vein impinging on the anal. Wings not large, simple and normal. Hind legs long and slender, the superior and inferior carinae of the femora well developed; hind tibiae with a dozen spines in the exterior row; calcaria moderately long; basal joint of hind tarsi not more than twice as long as second.

A single species is at hand.

GYMNES PUNCTATUS sp. nov.

Pallid, apparently yellowish green in life. Almost entirely immaculate, the only dark markings of the body being the obscure brownish fuscous median carina of the pronotum, and the blackish fuscous posterior third of the metazona. Tegmina with six or eight small, roundish, brownish fuscous spots arranged by pairs transversely at tolerably regular intervals beginning at the middle of the basal half. Wings very delicate, translucent. Hind femora with slight narrow infuscations beyond the middle and at tip; spines of hind tibiae black-tipped.

The surface is generally nearly smooth, and a little lustrous on the pronotum which is also feebly and rather delicately punctate especially on the metazona, the lateral lobes being quite smooth on the prozona; the sides of the head are also feebly subrugose but

* In allusion to the very short subsensiform antennae.

none the less shining, and the lower part of the face is slightly punctate.

Length of body 17 mm.; including closed tegmina 21 mm.; of antennae, 4.5 mm.; tegmina 15.5 mm.; hind femora 12 mm.

Unfortunately I have but a single specimen, the colors bleached from immersion in alcohol. It is a ♀ and was taken at Tighes, California, I believe during one of the explorations under Capt. Wheeler.

There remain the genera of the other division of *acrolophitinae* which by their gross form, hollowed dorsum of the metazona, long hind tarsi, and short frontal costa, are widely separated from the genera we have considered. Of these I know *Daemonea* only from Saussure's description, and can only refer thereto, but of

HIPPACRIS Scudder,

established on a Peruvian insect, I have before me two species closely resembling each other and yet widely distinct, which may be distinguished as follows:—

Antennae (of ♀ at least) nearly or quite half as long again as head and pronotum together, tapering regularly; tegmina relatively slender, being fully four times as long as broad; plates of the ovipositor of normal form..... *crassa*.

Antennae (of ♀ at least) apparently not much longer than head and pronotum together, several neighboring joints in two groups near the middle enlarged and depressed, forming broader areas; tegmina relatively stout, being less than three times as long as broad; plates of the ovipositor reduced to simple, straight, tapering, compressed laminae without armature

picticornis.

To the first species, *H. crassa*, described by me (Proc. Bost. soc. nat. hist., 1875, v. 17, p. 268) from the eastern slope of the Peruvian Andes, I have nothing to add, as the single female then seen is still the only one known to me. The other from the opposite side of the Andes may be called

HIPPACRIS PICTICORNIS sp. nov.

Nearly uniform dull leaf brown. Head punctate, but obscurely excepting on the lower half. Antennae brownish luteous, with the first and second, ninth and tenth, thirteenth to sixteenth and most of seventeenth joints black, the basal joint brownish luteous on the inner upper surface, the ninth and succeeding joints punctate and of these the black joints depressed and wider than the others. Pronotum with the crested lateral carinae of the prozona and the hinder edge margined with black, and just above the posterior lower angle of the lateral lobes a small round luteous spot margined with blackish. Tegmina with all the longitudinal veins, except in the apical fourth, luteous. Wings faint fuliginous, all the veins blackish fuscous, and a blackish fuliginous cloud along the edges of the tip. Hind femora blackish at extremity on the outer side; hind tibiae luteo-fuscous, the spines dull luteous, black-tipped, the tarsi dull luteous.

Length of body 31 mm.; including closed tegmina 36 mm.; of antennae (broken beyond 19th joint) 17 mm.; of tegmina 26 mm.; width of same in middle 10 mm.; hind femora 15.5 mm.; tibiae 13 mm.; tarsi 8 mm.

Upper Amazons, Brazil. One ♀.

The most remarkable thing about this species is the manner in which it differs from the other species and indeed from all *acridiodes* I have examined in the structure of the ovipositor. Normally,

as is well known, these parts are principally composed of an upper and a lower pair of oppositely curved, stout, falcate hooks, serving as scrapers, working in opposite directions in boring or rather scratching a vertical hole in the earth in which to deposit eggs. Plainly the oviposition of this creature must be something quite different and very likely analogous to that of the *locustodea*, for these hooks or scrapers are reduced to a couple of sets of straight, compressed, tapering, bluntly pointed laminae, entirely without serrations or armature of any kind, and attingent only at tip, the

upper pair the larger. They would appear to be useful only in crowding eggs into already existing crevices of wood or bark. Such a difference in sexual armor between two closely allied species I have never before seen.

Another point of interest in the species is the somewhat unusual contrasts of color and somewhat vivid color, especially in the antennae, in an insect which otherwise by its monochrome of dead leaf brown would seem to be gaining defence by avoiding vividness and contrast. Such are some of the anomalies in nature.

LOWNE'S ANATOMY OF THE BLOW-FLY.

The first part of Lowne's Anatomy, Morphology and Development of the Blow-fly has just appeared. The prospectus announced five quarterly parts each with about 64 pages of letterpress, four plates and some 20 original drawings. As usual, however, the first part runs beyond anticipations, containing 98 pages. The introductory matter of 31 pages gives a life history of *Calliphora*, an introduction to insect anatomy in general and the broad characteristics of the Diptera and its subdivisions; while the body of the part is given up to the anatomy of the larva; half a dozen brief topical bibliographies are scattered through the Part and a brief appendix gives methods for histological work.

HYDROCYANIC ACID SECRETED BY POLYDESMUS VIRGINIENSIS, DRURY.

Guldensteeden-Egeling has shown (Pflüger's Archiv f. d. ges. physiol., 1882, v. 28) that *Paradesmus (Fontaria) gracilis*, Koch, a myriopod indigenous to the Fiji Islands, Moluccas, etc., but which has now become acclimatized in some of the hot-houses of Europe, produces a secretion that contains besides benzaldehyd free hydrocyanic acid. In the same year Weber (Archiv f. mikr. anat., v. 21.) showed that the repugnatory glands which produce the secretion open near the median dorsal line on certain segments

and that it is only from these segments that the characteristic odor of prussic acid is diffused. Haase in a recent note, from which I have taken these bibliographical references, has again called attention to this curious secretion. (Sitzungs b. d. Gesell. naturf. Freunde zu Berlin, Jahrgang 1889, p. 97.)

While collecting specimens of our native *Polydesmus (Fontaria) virginiensis*, a myriopod not uncommon in some parts of Wisconsin and probably in many of the middle states, I observed that when roughly handled they emitted an odor like bruised peach-leaves or cyanide of potassium. Suspecting the presence of a secretion like that of the Moluccan species, I requested a professional chemist, Mr. Davenport Fisher of Milwaukee, to test the myriopods for free hydrocyanic acid. Mr. Fisher succeeded in establishing the presence of a small quantity of the highly poisonous substance. Subsequently I found it easy to make the test for myself. A few of the *polydesmi* were ground up in a mortar with a small quantity of water. A few drops of potassium hydrate and ferrous sulphate were then added to the solution obtained by filtering the mass. On the application of gentle heat and the further addition of a little ferric chloride with sufficient hydrochloric acid to dissolve the precipitated ferrous and ferric hydrates, the faint but distinct tinge of Prussian blue attested the presence of free hydrocyanic acid.

W. M. Wheeler.